



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D4281-1

Job Sheet 169442



Part No: D4281-1

Job Qty: 10 ea

Part Name: Spacer



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 12/11/17

Job Tracking No:

Due Date: 12/18/17

Created By: Mario Poulin

Type: SOLD

Description:

Note: DWG REV B IPP rev:A 10.11.18 new issue DD verf:EC IPP rev:B 10.12.02 AS PER DWG REV.A DD verf:EC

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	10 Ea		12/16/17	0.00	0.00	Start Up Waterjet		SC
100	Waterjet	10 pcs		12/16/17	0.00	3.33	Waterjet1		SC
101	QC	10 pcs		12/16/17	0.00	0.00	QC2 Waterjet-4		SC
110	Mill Conv	10 pcs		12/16/17	0.00	2.50	Mill Conv 1		J.C. 17-12-19
120	QC	10 pcs		12/16/17	0.00	0.00	QC2 Machining-5		J.C. 17-12-19
140	QC	10 pcs		12/16/17	0.00	0.00	QC8-4		M 12/12/20
150	HandFinish	10 pcs		12/16/17	0.00	0.44	HandFinish1		2017-12-21 J.C.
160	Powdercoat	10 pcs		12/18/17	0.00	0.49	Powdercoat1		RE 17-12-21
170	QC	10 pcs		12/18/17	0.00	0.00	QC3		AD 17-12-21
180	Packaging	10 pcs		12/18/17	0.00	0.00	Packaging3-2		
190	QC21-SA	10 Ea		12/18/17	0.00	0.00	QC21		

Part Op 100 - 1-Cut as per Dwg Dwg Rev: B Prog Rev: B 2-Deburr if necessary 3-OPEN HOLES ON DRILL

Descriptions: PRESS AS PER DWG

110 - FACE TO SIZE AS PER DWG

150 - Chemical Conversion Coat per QSI005 4.1

160 - White Gloss (Ref: 4.3.5.1) per QSI005 4.3-Alum POWDER COAT: Start Time: 3:20 Oven

Temperature: 320 Finish Time: 3:00

170 - QC3- Inspect Part Finish

180 - Identify as per dwg & Stock Location:

190 - QC21- Final Inspection - Work Order Release

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	M6061T6B0.750X03.000	3	10	0	0

M136200

Part Specifications

Spec No	Description	Target/Tolerance	Limits	Type	Special Comments
1	Spacer	0.129Inches + 0.005 - 0.001	0.134 0.128	Diameter	
2	Spacer	0.250Inches ± 0.030	0.280 0.220		
3	Spacer	0.550Inches ± 0.030	0.580 0.520		
4	Spacer	0.700Inches ± 0.030	0.730		

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																																																		
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																																																		
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																																																		
Large Fab ☐	Composite ☐	Supplier ☐																																																			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval _____																																																	
Description Work Order Deviation		Disposition		Completed By _____																																																	
Job No: 169442 Mfg Date: 12/15/17 Start up Operation D4281-1 PART NO: _____ Revision: _____ Operation: _____ Change No: _____ Spacer DART Aerospace Ltd. 1270 Aberdeen Street Hawkesbury, ON K6A 1K7 CANADA TEL: 1 613 632-5200 Email: sales@dartaero.com www.dartaerospace.com S023270 DART AEROSPACE																																																					
Root Cause <table style="width:100%;"> <tr> <td>Environment ☐</td> <td>No Re-verification ☐</td> </tr> <tr> <td>Design ☐</td> <td>Operator ☐</td> </tr> <tr> <td>Doc/Data ☐</td> <td>Offset/Setup ☐</td> </tr> <tr> <td>Equip/Tooling ☐</td> <td>Supplier ☐</td> </tr> <tr> <td>Handling/Pre ☐</td> <td>Training ☐</td> </tr> <tr> <td>Material ☐</td> <td>Use for Testing ☐</td> </tr> <tr> <td>Internal Transport ☐</td> <td>Poor Information ☐</td> </tr> <tr> <td>Tribal Knowledge ☐</td> <td>Rushing ☐</td> </tr> <tr> <td>LOA ☐</td> <td>Product Improvement ☐</td> </tr> <tr> <td>Substation ☐</td> <td>Process Improvement ☐</td> </tr> <tr> <td>Past Expiry Date ☐</td> <td>Manufacturing Process ☐</td> </tr> <tr> <td>Misidentified ☐</td> <td>Past Due ☐</td> </tr> </table>		Environment ☐	No Re-verification ☐	Design ☐	Operator ☐	Doc/Data ☐	Offset/Setup ☐	Equip/Tooling ☐	Supplier ☐	Handling/Pre ☐	Training ☐	Material ☐	Use for Testing ☐	Internal Transport ☐	Poor Information ☐	Tribal Knowledge ☐	Rushing ☐	LOA ☐	Product Improvement ☐	Substation ☐	Process Improvement ☐	Past Expiry Date ☐	Manufacturing Process ☐	Misidentified ☐	Past Due ☐	<table style="width:100%;"> <tr> <td>Pressure/Force ☐</td> <td>Cracks ☐</td> <td>Crimp/Kink/R. ☐</td> <td>Cuffs ☐</td> <td>Crushing ☐</td> <td>Heat Treat ☐</td> <td>Wave/Twist in Tube ☐</td> <td>Marks/Chatter ☐</td> </tr> <tr> <td>Bending ☐</td> <td>Centre Not Cc ☐</td> <td>Cuffs ☐</td> <td>Crushing ☐</td> <td>Heat Treat ☐</td> <td>Wave/Twist in Tube ☐</td> <td>Marks/Chatter ☐</td> <td>OTHER : ☐</td> </tr> <tr> <td>Countersink ☐</td> <td>Cut Too Short ☐</td> <td>Instructions Incomplete/Unclear ☐</td> <td>Drill Holes ☐</td> <td>Mislabeled ☐</td> <td>Fit/Function ☐</td> <td>Misaligned/off center ☐</td> <td>Turning Sequence ☐</td> </tr> </table>				Pressure/Force ☐	Cracks ☐	Crimp/Kink/R. ☐	Cuffs ☐	Crushing ☐	Heat Treat ☐	Wave/Twist in Tube ☐	Marks/Chatter ☐	Bending ☐	Centre Not Cc ☐	Cuffs ☐	Crushing ☐	Heat Treat ☐	Wave/Twist in Tube ☐	Marks/Chatter ☐	OTHER : ☐	Countersink ☐	Cut Too Short ☐	Instructions Incomplete/Unclear ☐	Drill Holes ☐	Mislabeled ☐	Fit/Function ☐	Misaligned/off center ☐	Turning Sequence ☐
Environment ☐	No Re-verification ☐																																																				
Design ☐	Operator ☐																																																				
Doc/Data ☐	Offset/Setup ☐																																																				
Equip/Tooling ☐	Supplier ☐																																																				
Handling/Pre ☐	Training ☐																																																				
Material ☐	Use for Testing ☐																																																				
Internal Transport ☐	Poor Information ☐																																																				
Tribal Knowledge ☐	Rushing ☐																																																				
LOA ☐	Product Improvement ☐																																																				
Substation ☐	Process Improvement ☐																																																				
Past Expiry Date ☐	Manufacturing Process ☐																																																				
Misidentified ☐	Past Due ☐																																																				
Pressure/Force ☐	Cracks ☐	Crimp/Kink/R. ☐	Cuffs ☐	Crushing ☐	Heat Treat ☐	Wave/Twist in Tube ☐	Marks/Chatter ☐																																														
Bending ☐	Centre Not Cc ☐	Cuffs ☐	Crushing ☐	Heat Treat ☐	Wave/Twist in Tube ☐	Marks/Chatter ☐	OTHER : ☐																																														
Countersink ☐	Cut Too Short ☐	Instructions Incomplete/Unclear ☐	Drill Holes ☐	Mislabeled ☐	Fit/Function ☐	Misaligned/off center ☐	Turning Sequence ☐																																														

			0.670
5	Spacer	3.160Inches $\pm$ 0.030	3.190 3.130
6	Spacer	2.660Inches $\pm$ 0.010	2.670 2.650
7	Spacer	1.330Inches $\pm$ 0.010	1.340 1.320
8	Spacer	1.900Inches $\pm$ 0.010	1.910 1.890
9	Spacer	0.950Inches $\pm$ 0.010	0.960 0.940
10	Spacer	0.889Inches $\pm$ 0.010	0.899 0.879
11	Spacer	2.598Inches $\pm$ 0.010	2.608 2.588
12	Spacer	0.866Inches $\pm$ 0.010	0.876 0.856
13	Spacer	2.400Inches $\pm$ 0.030	2.430 2.370
14	Spacer	0.735Inches $\pm$ 0.010	0.745 0.725

Plex 12/11/17 4:11 PM dart.poulin.mario

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

DART AEROSPACE LTD		Work Order:	169442 167941
Description: Spacer		Part Number:	D4281-1
Inspection Dwg: D4281	Rev: B	Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø0.129	+0.005/-0.001	0.130	1		VR-08	
0.25	+/-0.030	0.252	1			
0.55	+/-0.030	0.553	1			
0.70	+/-0.030	0.703	1			
3.16	+/-0.030	3.166	1			
2.660	+/-0.010	2.664	1			
1.330	+/-0.010	1.332	1			
1.900	+/-0.010	1.903	1			
0.950	+/-0.010	0.949	1			
0.889	+/-0.010	0.89	1			
2.598	+/-0.010	2.599	1			
0.866	+/-0.010	0.867	1			
2.40	+/-0.030	2.409	1			
0.735	+/-0.010	0.735	✓		Caliper	JCL-08

Measured by: SC/b.c.-i	Audited by: [Signature]	Preliminary Approval:
Date: 17/12/14	Date: 17/12/20	Date:

Rev	Date	Change	Revised by	Approved
A	11.03.08	New Issue	KJ	
B	11.08.22	Dwg Rev updated	KJ	[Signature]